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**Detonation Structure for Unstable Waves in Condensed Phase**

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In gases, propagating detonations develop a distinct three-dimensional cellular structure, characterized by triple point shock (Mach, incident and transverse) interactions that propagate transverse to the front. An oblique shock polar theory for equations of state appropriate to a mixture of gaseous reactants confirms the existence of such triple shock structures for detonation velocities appropriate to gases. A stability analysis of detonation for some EOS and reaction models appropriate to condensed phase systems have also indicated the possibility of unstable non-planar detonations; however an oblique shock polar analysis indicates that triple shock configurations may not be feasible. High resolution numerical simulations are used to examine the structure of condensed phase unstable detonations in such cases.

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